

Abstract

A system and method that guides a device to an object using periodically adaptive guidance. The guidance and control system creates a reconstructed line-of-sight (LOS) vector to avoid system destabilization associated with small angle approximations during high bore sight engagements. The guidance system adaptively estimates the periodic maneuver of evasive objects with a set of harmonically balanced Kalman filter banks. The Harmonically Balanced Kalman filter banks generate a set of probabilities that weight the effect of each individual Kalman filters on a resultant guidance command signal. The guidance command signal generated by the system acts perpendicular to the object LOS. The guidance and control system uses vectored proportional navigation guidance laws, optimal proportion navigation laws and periodically adaptive augmented guidance laws to generate a guidance command signal to supply to an autopilot.

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